Abbreviations:
PL = Plenary; LO = Lightning oral; MP = Moderated poster; P = Poster

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Plenary Oral Presentations

PL01

Prospective multicenter validation of the Canadian TIA Score for predicting subsequent stroke within seven days

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Introduction: Individualizing risk for stroke following a transient ischemic attack (TIA) is a topic of intense research, as existing scores are context-dependent or have not been well validated. The Canadian TIA Score stratifies risk of subsequent stroke into low, moderate and high risk. Our objective was to prospectively validate the Canadian TIA Score in a new cohort of emergency department (ED) patients. **Methods**: We conducted a prospective cohort study in 14 Canadian EDs over 4 years. We enrolled consecutive adult patients with an ED visit for TIA or nondisabling stroke. Treating physicians recorded standardized clinical variables onto data collection forms. Given the ability of prompt emergency carotid endarterectomy (CEA) to prevent stroke (NNT = 3) in high risk patients, our primary outcome was the composite of subsequent stroke or CEA ≤7 days. We conducted telephone follow-up using the validated Questionnaire for Verifying Stroke Free Status at 7 and 90 days. Outcomes were adjudicated by panels of 3 local stroke experts, blinded to the index ED data collection form. Based on prior work, we estimated a sample size of 5,004 patients including 93 subsequent strokes, would yield 95% confidence bands of +/− 10% for sensitivity and likelihood ratio (LR). Our analyses assessed interval LRs (iLR) with 95% CIs. **Results**: We prospectively enrolled 7,569 patients with mean 68.4 +/−14.7 years and 52.4% female, of whom 107 (1.4%) had a subsequent stroke and 74 (1.0%) CEA ≤7 days (total outcomes = 181). We enrolled 81.2% of eligible patients; missed patients were similar to enrolled. The Canadian TIA Score stratified the stroke/CEA ≤7days risk as: Low (probability <0.2%, iLR 0.20 [95%CI 0.091-0.44]; Moderate (probability 1.3%, iLR 0.79 [0.68-0.92]; High (probability 2.6%, iLR 2.2 [1.9-2.6]. Sensitivity analysis for just stroke ≤7 days yielded similar results: Low iLR 0.17 [95%CI 0.056-0.52], Medium iLR 0.89 [0.75-1.1], High iLR 2.0 [1.6-2.4]. **Conclusion**: The Canadian TIA Score accurately identifies TIA patients risk for stroke/CEA ≤7 days. Patients classified as low risk can be safely discharged following a careful ED assessment with elective follow-up. Patients at moderate risk can undergo additional testing in the ED, have antithrombotic therapy optimized, and be offered early stroke specialist follow-up. Patients at high risk should in most cases be fully investigated and managed ideally in consultation with a stroke specialist during their index ED visit.

Keywords: risk scale, stroke, transient ischemic attack

PL02

A randomized, controlled comparison of electrical versus pharmacological cardioversion for emergency department patients with recent-onset atrial fibrillation

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Introduction: For rhythm control of acute atrial fibrillation (AAF) in the emergency department (ED), choices include initial drug therapy or initial electrical cardioversion (ECV). We compared the strategies of pharmacological cardioversion followed by ECV if necessary (Drug-Shock), and ECV alone (Shock Only). **Methods**: We conducted a randomized, blinded, placebo-controlled trial (1:1 allocation) comparing two rhythm control strategies at 11 academic EDs. We included stable adult patients with AAF, where onset of symptoms was <48 hours. Patients underwent central web-based randomization stratified by site. The Drug-Shock group received an infusion of procainamide (15mg/kg over 30 minutes) followed 30 minutes later, if necessary, by ECV at 200 joules x 3 shocks. The Shock Only group received an infusion of saline followed, if necessary, by ECV x 3 shocks. The primary outcome was conversion to sinus rhythm for ≥30 minutes at any time following onset of infusion. Patients were followed for 14 days. The primary outcome was evaluated on an apriori-specified modified intention-to-treat (MITT) basis excluding patients who never received the study infusion (e.g. spontaneous conversion). Data were analyzed using chi-squared tests and logistic regression. Our target sample size was 374 evaluable patients. **Results**: Of 395 randomized patients, 18 were excluded from the MITT analysis; none were lost to follow-up. The Drug-Shock (N = 198) and Shock Only (N = 180) groups (total = 378) were similar for all characteristics including mean age (60.0 vs 59.5 yrs), duration of AAF (10.1 vs 10.8 hrs), previous AF (67.2% vs 68.3%), median CHADS2 score (0 vs 0), and mean initial heart rate (119.9 vs 118.0 bpm). More patients converted to normal sinus rhythm in the Drug-Shock group (97.0% vs 92.2%; absolute difference 4.8%, 95% CI 0.2-9.9; P = 0.04). The multivariable analyses confirmed the Drug-Shock strategy superiority (P = 0.04). There were no statistically significant differences for time to conversion (91.4 vs 85.4 minutes), total ED length of stay (7.1 vs 7.7 hours), disposition home (97.0% vs 96.1%), and stroke within 14 days (0 vs 0). Premature discontinuation of infusion was more common in the Drug-Shock group (8.1% vs 0.6%) but there were no serious adverse events. **Conclusion**: Both the Drug-Shock and Shock Only strategies were highly effective and safe in allowing AAF patients to go home in sinus rhythm. A strategy of initial cardioversion with procainamide was superior to a strategy of immediate ECV.

Keywords: atrial fibrillation, cardioversion

PL03

Prevalence and clinical predictors of intracranial hemorrhage in seniors who have fallen

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Introduction: The Canadian population is aging and an increasing proportion of emergency department (ED) patients are seniors. ED

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visits among seniors are frequently instigated by a fall at home. Some of these patients develop intracranial hemorrhage (ICH) because of falling. There has been little research on the frequency of ICH in elderly patients who fall, and on which clinical factors are associated with ICH in these patients. The aim of this study was to identify the incidence of ICH, and the clinical features which are associated with ICH, in seniors who present to the ED having fallen. **Methods**: This was a prospective cohort study conducted in three EDs. Patients were included if they were age >65 years, and presented to the ED within 48 hours of a fall on level ground, off a bed/chair/toilet or down one step. Patients were excluded if they fell from a height, were knocked over by a vehicle or were assaulted. ED physicians recorded predefined clinical findings (yes/no) before any head imaging was done. Head imaging was done at the ED physician's discretion. All patients were followed for 6 weeks (both by telephone call and chart review at 6 weeks) for evidence of ICH. Associations between baseline clinical findings and the presence of ICH were assessed with multivariable logistic regression. **Results**: In total, 1753 patients were enrolled. The prevalence of ICH was 5.0% (88 patients), of whom 74 patients had ICH on the ED CT scan and 14 had ICH diagnosed during follow-up. 61% were female and the median age was 82 (interquartile range 75-88). History included hypertension in 76%, diabetes in 29%, dementia in 27%, stroke/TIA in 19%, major bleeding in 11% and chronic kidney disease in 11%. 35% were on antiplatelet therapy and 25% were on an anticoagulant. Only 4 clinical variables were independently associated with ICH: bruise/laceration on the head (odds ratio (OR): 4.3; 95% CI 2.7-7.0), new abnormalities on neurological examination (OR: 4.4; 2.4-8.1), chronic kidney disease (OR: 2.4; 1.3-4.6) and reduced GCS from baseline (OR: 1.9; 1.0-3.4). Neither anticoagulation (OR: 0.9; 0.5-1.6) nor antiplatelet use (OR: 1.1; 0.6-1.8) appeared to be associated with ICH. **Conclusion**: This prospective study found a prevalence of ICH of 5.0% in seniors after a fall, and that bruising on the head, abnormal neurological examination, abnormal GCS and chronic kidney disease were predictive of ICH.
Keywords: intracranial hemorrhage, predictors, seniors

PL04

Comparison of the cost and the quality of the care provided to low acuity patients in an emergency department and a walk-in clinic

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Introduction: Low acuity patients have been controversially tagged as a source of emergency department (ED) misuse. Authorities for many Canadian health regions have set up policies so these patients preferably present to walk-in clinics (WIC). We compared the cost and quality of the care given to low acuity patients in an academic ED and a WIC of Québec City during fiscal year 2015-16. **Methods**: We conducted an ambidirectional (prospective and retrospective) cohort study using a time-driven activity-based costing method. This method uses duration of care processes (e.g., triage) to allocate to patient care all direct costs (e.g., personnel, consumables), overheads (e.g., building maintenance) and physician charges. We included consecutive adult patients, ambulatory at all time and discharged from the ED or WIC with a diagnosis of upper respiratory tract infection (URTI), urinary tract infection (UTI) or low back pain. Mean cost [95%CI] per patient per condition was compared between settings after risk-adjustment for age, sex, vital signs, number of regular medications and co-morbidities using generalized log-gamma regression models. Proportions [95% CI] of antibiotic prescription and chest X-Ray use in URTI, compliance with provincial guidelines on use of antibiotics in UTI, and column X-Ray use in low back pain were compared between settings using a Pearson Chi-Square test. **Results**: A total of 409 patients were included. ED and WIC groups were similar in terms of age, sex and vital signs on presentation, but ED patients had a greater burden of comorbidities. Adjusted mean cost (2016 CAN$) of care was significantly higher in the ED than in the WIC ($p < 0.0001$) for URTI (78.42[64.85-94.82] vs. 59.43[50.43-70.06]), UTI (78.88 [69.53-89.48] vs. 53.29[43.68-65.03]), and low back pain (87.97 [68.30-113.32] vs. 61.71[47.90-79.51]). For URTI, antibiotics were more frequently prescribed in the WIC (44.1%[34.3-54.3] vs. 5.8% [1.2-16.0]; $p < 0.0001$) and chest X-Rays, more frequently used in the ED (26.9%[15.6-41.0] vs. 13.7%[7.7-22.0]; $p = 0.05$). No significant differences were observed in the compliance with guidelines on use of antibiotics in UTI and in the use of column X-Ray in low back pain. **Conclusion**: Total cost of care for low acuity patients is lower in walk-in clinics than in EDs. However, our results suggest that quality-of-care issues should be considered in determining the best alternate setting for treating ambulatory emergency patients.
Keywords: healthcare costs, low-acuity patients, quality of healthcare

Oral Presentations

LO01

Development and validation of an adjustment score for ruling out MI using a single high-sensitivity cardiac troponin T assay in patients with chest pain and kidney dysfunction

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Introduction: Very low concentrations of high-sensitivity cardiac troponin can rule-out myocardial infarction (MI) at ED arrival in patients with chest pain. However, this single troponin rule-out strategy works poorly in patients with renal impairment and elevated baseline troponin levels. The objective of this study was to develop and validate a troponin adjustment strategy to accurately rule-out MI with a single hs-cTnTmeasurement in patients with kidney dysfunction. **Methods**: We used data from three cohorts of ED chest pain patients to develop an adjustment score for a high-sensitivity troponin T (hs-cTnT) assay in patients with kidney dysfunction. The derivation cohort (n = 8846) used administrative and registry data. Two validation cohorts (n = 1187 and 1092) were prospectively-collected. The score assigned points for increasing hs-cTnT levels and subtracted points for lower estimated glomerular filtration rate (eGFR). In the derivation cohort, hs-cTnT concentrations achieving 98.5% sensitivity in of patients with eGFR ≥60, 45-59, 30-44, 15-29 and <15 were assigned ascending positive integer values. Negative integer values were assigned to eGFR values 45-59, 30-44, 15-29 and <15. The scpres for troponin and eGFR were summed for each patient, with scores ranging from −4 to +5. The proportion of patients with 7-day MI ruled out by a score ≤0, sensitivity, NPV, negative likelihood ratio (LR-) and area under the curve (AUC) were quantified

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